Dr. Gordon also referred to the experiments of Ballet and Faure in 1899, who had shown that subcutaneous injections of maceration of tobacco produced epileptiform convulsions, and the speaker said he could recall a case of epilepsy in his own practice where convulsions would follow the use of tobacco. The patient was an inveterate smoker. He was forbidden to chew or smoke: every time he would resume his old habit, the convulsive attacks would increase in frequency and intensity. Rénon, in 1905, reported an important case of intermittent claudication, at the autopsy of which was found a thrombosis of the abdominal aorta. The patient was neither alcoholic nor syphilitic, but used tobacco very excessively. The reporter compares tobacco to adrenalin, which is a vaso-constrictor, and both produce arterial hypertension. In arthritic individuals, who usually smoked excessively, it is not impossible that tobacco plays a role in the production of their arterial sclerosis. Erb observed this influence of tobacco in 38 cases out of 45 of intermittent claudication.

The President, Dr. Dana, referred to the deleterious effects of the inhalation habit among boys who had become addicted to the use of cigarettes.

PHILADELPHIA NEUROLOGICAL SOCIETY.

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The President, Dr. Alfred Gordon, in the Chair.

A CASE OF ABSCESS OF THE BRAIN OF TUBERCULAR ORIGIN IN A BABOON.

By Dr. J. H. W. Rhein and Dr. Herbert Fox.

The following is a preliminary report upon a case of tuberculous abscess of the brain in a baboon, whose symptoms were studied three days before death. A future report will be made which will be in the nature of a comparative anatomical study. The brain, in large part, has been cut in serial sections, and, as the study of these sections is not quite complete, only a brief reference to the pathological anatomy will be made. The baboon appeared to be perfectly well until October 18, 1906, when some lameness in the upper and lower extremities on the right side was observed. This gradually increased, and was associated with twitching of the muscles of the left side. On November 30, 1906, Dr. Rhein examined him, and found the following condition. The right upper and lower extremities were weaker than those on the left side. The power in the left upper and lower extremities seemed to be fair. He was able to hold on to an iron bar with the fingers of the upper and lower extremities on the right side, but in withdrawing the bar it was not difficult to overcome his grasp, and the power on this side was distinctly less than that on the left. The movements of the right arm were somewhat ataxic, as observed when he made efforts to grasp the iron bar with which the examination was made. The knee jerks were increased on both sides, and appeared to be equally so. There was no evidence of facial palsy. He moved both sides of the face equally well at those times at which he expressed anger or fear in the facial expression. The tongue seemed to be retracted equally well on both sides. Tests for hemianopsia were, of course, unsatisfactory, but he seemed to recognize readily the approach of the iron bar from both sides. There was no disturbance of the rectal or bladder functions, although at the autopsy the bladder was full. At the autopsy the brain and spinal cord, with the other organs, were examined. The dura was adherent to the left side of the brain, in the prefontal region, in the upper third, and when the brain was removed it was observed that an area of softening lay beneath this point. A small caseous mass was also observed at the base of the right lung, and beneath the diaphragm on the right side was a large abscess, partly involving the liver. The tubercle bacillus was found in the pus removed from the area of softening beneath the left cortex. A study of the brain revealed the presence of three foci of softening. The largest one was situated in the left hemisphere in the prefontal region, and extended from just beneath the cortex in the upper third of the prefontal region, downward almost to the base of the brain. This area was cylindrical in shape, and measured 2.5 centimeters in its greatest diameter. The area of softening consisted of caseated material and pus, in which the tubercle bacillus was found present. A second area of softening was found on the right side of the brain, much smaller in extent, and measuring about 1.5 centimeters in diameter. There was no pus present in this area, but it consisted of a circumscribed mass of caseous material. The apex of this area of softening was just beneath the cortex in the prefrontal region. On the right side, and in the removal of the brain the cortex was torn just above this area of caseation. This point was .5 of a centimeter in front of the central fissure, and about 1 centimeter below the superior surface of the brain.

A third area of softening was observed posteriorly in the white substance, in the parieto-occipital region, and measured about 6 millimeters in diameter. A study of the sections of the brain shows beautifully the extent of the destruction of the brain tissue. The optic thalamus, the lenticular nucleus, and the posterior limb of the internal capsule on the left side, are destroyed in part. The anterior limb of the internal capsule, in one section, is preserved, notwithstanding the fact that the optic thalamus on the same side has been, in large part, destroyed. And in spite of the fact that the posterior limb of the internal capsule has been destroyed at some levels, it is interesting to note that the degeneration in the pyramidal tract of the pons and medulla, and the crossed pyramidal tract of the spinal cord on the opposite side is not intense—although distinct. It is also very interesting to note that, in view of the severe insult to the posterior limb of the internal capsule on the left side, there was no more paralysis, for it will be remembered that there was considerable power of prehension in the right upper and lower extremities. The smallness of the frontal lobes, and the unusual development of the temporal lobes, should be noted. In looking at the illustration it will be observed that the development of the cerebral convolutions is much better than in the usual picture of the brain of the circopithecidæ, and the accompanying drawing of the ordinary brain of the circopithecidæ will serve to confirm this observation. Dr. Rhein was not prepared to discuss the question of tuberculous abscesses of the brain, either in the baboon or in man. It is well known that tuberculous infiltrations occur in the brain substance, which may undergo cheesy degeneration. Although he had not had an opportunity, thus far, of studying the literature of the subject, his impression was that tuberculous abscesses of the brain substance itself are comparatively rare in men.

Dr. Herbert Fox said:

In addition, sections made through the brain tissue in the neighborhood of the large abscesses, showed small foci of leucocytic and epithelioid infiltration, in which areas the tubercle bacillus could be demonstrated by stain. The same sections, stained by Gram Weigert method, showed the presence of some bodies at the margins of these small collections, but those could not be identified positively as containing bacteria. This brain came from an adult in the Zoological Gardens, on October 14, 1905, which was kept in the laboratory until March 31, 1906, having been injected twice during that interval with tuberculin, and the last injection which was given on the 10th of March, 1906, was followed by a typical reaction of a healthy monkey. In the Monkey House it was perfectly well until October 18, 1906, when it began to show lameness in the upper and lower extremities on the right side. The animal was returned to the laboratory on November 23rd, and while there showed progressive lameness, with progressive twitchings of the right side, but no convulsive seizures. It died on Dec. 2, 1906.

Dr. D. J. McCarthy thought that tuberculous abscess of the brain of lower animals was a decided rarity. Tuberculosis of the brain, however, apart from tuberculous abscess is not a very exceptional condition. In a good deal of the experimental work that has been done on the lower animals, especially cows and heifers, tuberculous meningitis has not infrequently been met with as a complication. The type of tuberculosis in the lower animals is not as it is in the human being which undergoes liquefaction necrosis; and as a result of the tendency to break down in the human being an abscess of the brain of tuberculous origin is not a very infrequent condition. The tendency is for the development of a distinct granulomatous process or a fibrinous process, the latter much less frequent. In the lower animals there is a general tendency toward a condition of fibrosis. In the monkey there is more frequency of the disease in the spleen and liver than in the brain. Dr. McCarthy came across a tuberculous tumor in a heifer which developed spontaneously, in which the general structure of the tumor at the first glance and in the microscopic section was one which could easily be mistaken for endothelioma. Here again the tendency was for final organization rather than breaking down. Microscopic sections and sections stained for presence of tubercle bacillus made the diagnosis in that particular case. Another very interesting case of tuberculosis which has a distinct bearing upon certain types of tuberculous meningitis, was a case Dr. McCarthy studied a few months ago, the brain of a cow which had received inoculations of tubercle bacillus with the idea of developing antituberculous serum. While under observation she calved, or rather miscarried, and following was septic infection of the uterus and she died of tuberculous meningitis of the septic plastic type seen in the human being. There was infection not only with the tubercle bacillus, but with the staphylococcus and streptococcus. Dr. McCarthy has noticed that in tuberculous proliferation types in the human being in the same case where there is miliary tuberculosis but mixed septic plastic type, in those cases they complicate the abscess type of advanced pulmonary tuberculosis and that this condition is due to a mixed infection. He considers this case of Dr. Rhein's so far as the rarity is concerned, not only in the monkey but the lower animals in general, notable.

FAT CRYSTALS IN THE SPINAL CORD.

By Dr. Alfred Reginald Allen.

The spinal cord in question was removed from a young man who had suffered a crushing injury of the spinal column in the neighborhood of the ninth thoracic vertebra. There was evidently an incomplete solution of continuity at the point of injury and the patient lived over a year during which time laminectomy was performed with very poor result. The osmic acid preparations of sections above the injury show numerous crystals stained intensely black. The form is either acicular or irregular plates suggesting a parallelogram in shape. There was not found the feathery variety reported by McCarthy ("Contributions from Wm. Pepper Laboratory of Clinical Medicine," Vol. 6, 1903).

Dr. McCarthy said that as far as these crystals are concerned, they are apparently of the same type of crystals, excepting a little bit larger than those in the case he described. Like Dr. Allen's case the crystals were found only in the posterior columns and the degeneration was secondary to a tuberculous caseating tumor of the lower dorsal region (as far as he can remember). The degeneration of the posterior columns was distinctly yellow in color, or rather uniquely yellow, as far as any gross color changes he has seen in the nervous system; one might have surmised some fatty change by the reaction. There were a large number of acicular crystals superimposed upon them in more or less rosette shapes, giving the feathery appearance. That was due to the fact that the sections were not cut very thin, as in Dr. Allen's case, and Dr. McCarthy thought that would account for the difference in form. The only reference he could find was in Eichhorst, in which it was stated that in the neighborhood of certain areas of focal softening in the nervous system Eichhorst occasionally saw these fat crystals and concluded that they were a combination of fatty acids and magnesium. With the two types the causes were different. Dr. McCarthy's case was a slowly forming degeneration due to a slowly growing tuberculous tumor of the dorsal cord, whereas Dr. Allen's was a rapidly developing case. There must be chemical factors which determine the formation of these fatty crystals. The disappearance of the fat crystals in Dr. Allen's case was probably due to a different chemical combination.'

Dr. W. G. Spiller said he had seen Dr. McCarthy's specimens and Dr. Allen's. He thinks it is very singular that these fat crystals should be so rare. He has never found them, though he has been on the lookout for them, and has examined a great many specimens of the spinal cord. The fact that they disappear so readily is suggestive of artefacts, and there may be something unknown at present which produces this crystallization after death.

Dr. McCarthy said he agreed with Dr. Spiller that the crystals probably were not present before death. Both of these specimens were hardened in Müller's solution.